Carbaryl Monitoring Report

Environmental Monitoring and Pest Management Branch
Department of Pesticide Regulation
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Environmental Monitoring of Carbaryl in Glassy-Winged Sharpshooter Treatment Areas in Rancho Cordova

This newsletter provides brief summary of monitoring results of carbaryl (7® Insecticide) in various environmental samples collected by the Department of Pesticide Regulation (DPR) during the glassy-winged sharpshooter control program in Rancho Cordova, Sacramento County.

Field crew applies carbaryl

The Sacramento County Departments of Agriculture, under the guidance of the California Department of Food and Agriculture, has been treating glassy-winged sharpshooter infested properties with carbaryl. DPR monitors selected treatments in urban residential areas for carbaryl residues. Samples were taken for spray mixture in tank, air, foliage, surface water, and garden fruit and vegetable (see map).

Spray Tank Samples

Samples were collected from the hose-end of a spray tank. Results show that the tanks were well mixed and the amount of carbaryl used was according to label and very consistent throughout the spray operation.

Concentration of carbaryl in tank samples, Rancho Cordova, Calif., 2000

Location	Date Sampled	Concentration (%)
Royal Crest Cir	8/2	0.11
Royal Crest Cir	8/16	0.12
Wilderness Rd.	8/2	0.12

Calculated theoretical tank concentrations at label rates from 2 to 4 teaspoons per gallon of water are 0.11 to 0.21 percent, respectively.

Leaf Samples

At each treatment site, 40 one-inch diameter leaf punches were taken one hour after treatment. Samples were taken from ground to 3 feet and at 3-6 ft. Samples were analyzed for carbaryl dislodgeable-foliar residue.

Leaf punch samples taken from a sprayed plum tree in a backyard.

Leaf residue data shows spray coverage on foliage was thorough and uniform. The concentrations were comparable to reported levels of 2.4 to 5.6 ug/cm^2 for save reentry for citrus harvest. (Iwata et al. 1979. J. Agric Food Chem. 27:1141-1145)

Dislodgeable foliar residues of carbaryl in various leave samples, Rancho Cordova, Calif. 2000

Location	Leaf Type	(ug/cm^2) 0-3 ft	3-6ft
Royal Crest Cir.	Oleander	2.9	3.2
Royal Crest Cir.	Oleander	3.7	3.8
Wilderness Rd	Plum	2.3	3.6

Water Samples

Fourteen water samples were taken from five sites. Only two samples had carbaryl residues: 0.125 ppb (parts per billion) at Coloma Water Treatment Plant Basin 2, and 6.94 ppb in a backyard fishpond. These are well below the 60 ppb California Department of Health Services' drinking water health advisory and LC_{50} (lethal concentration) value for gold fish of 10,000 ppb.

Water basin at Coloma Water Treatment Plant located about 65 yards from treatment area (top right beyond the trees).

Sampling canal between treatment area (right bank) and Coloma Water Treatment Plant (left)

Produce Samples

Backyard fruit and vegetable samples were collected at preharvest interval, the required number of days elapsed before harvest. These preharvest intervals are crop specific and are listed on the carbaryl product label. The intervals for plum and tomatoes are both 3 days. All concentrations of carbaryl in produce sampled were well below the U.S. EPA established crop specific tolerances of 10 ppm (parts per million). The tolerances are enforceable maximum amount of residue allowed in crops and foods.

Concentration of carbaryl in produce sampled at preharvest interval in treatment area, Rancho Cordova, Calif. 2000.

Location	Date	Produce	(ppm)
Royal Crest Cir	8/5	Tomatoes	4.03
	8/19	Tomatoes	7.26
Wilderness Rd.	8/5	Plums	0.251

U.S. EPA tolerances=10 ppm

Air Samples

Samples were taken at four intervals: for minimum of 12 hours before application, the duration of application plus one hour, 24 hours after application, another 24 hours. All samples were collected using XAD-4 resin tube with personnel air sampler at 3 liters per minute. All concentrations were well below the DPR's preliminary acute (24-hour) health screening level of 6,313 ppt (parts per trillion).

Concentration of carbaryl in air before, during and after application in Rancho Cordova, Calif., 2000

Location	Date Sampled	Before Spray (ppt)	During Application (ppt)	Post Application 24 hours (ppt)	Post Application 48 hours (ppt)
Royal Crest Cir	8/2	ND	113	79	37
Royal Crest Cir	8/16	Not sampled	101	103	65
Wilderness Rd	8/2	Not sampled	66	39	22

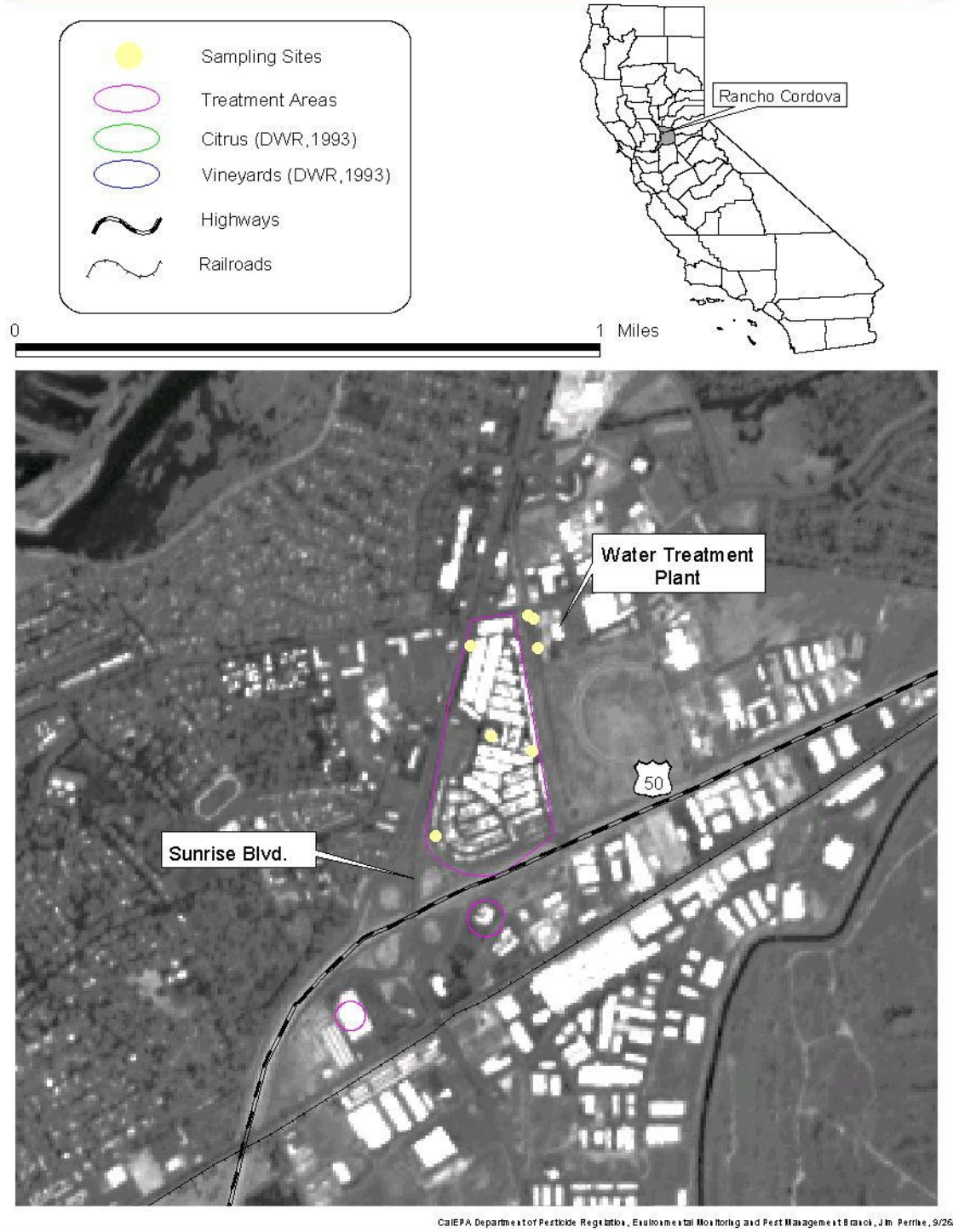
ND= none detected reliable reporting level 6 ppt.

We thank the homeowners for allowing us to take samples from their properties. We acknowledge the Center for Analytical Chemistry for samples analyses, and Department of Fish and Game for fish tissue analyses.
The assistance of the staff of the Tulare County Agricultural Commissioners, the Department of Food and Agriculture and the applicators is much appreciated. This project was funded by the California Department of Food and Agriculture's glassy-winged sharpshooter project special appropriation.

The mention of commercial products in this report is not be construed as either an actual or implied endorsement of such product.

For a detailed report, study protocol and other updates, visit http://www.cdpr.ca.gov/docs/gwss
or contact Kean S. Goh at (916) 324-4072 or email at kgoh@cdpr.ca.gov.

Carbaryl Monitoring Sites in the Glassy-winged Sharpshooter Treatment Areas, Rancho Cordova, Sacramento County, Calif., 2000



CalEPA Department of Pesticide Regulation, Environmental Monitoring and Pest Management Branch, Jim Perrine, 9/26/00